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Notes on xenophytes detected in Catalonia, Spain

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Abstract
NOTES ON XENOPHYTES DETECTED IN CATALONIA, SPAIN.— These notes include six species, among them three grasses: *Axonopus compressus*, *Dactyloctenium aegyptium* and *Megathyrsus maximus*, the crucifer *Lepidium densiflorum*, a dwarf annual composite *Soliva sessilis*, and the climbing *Aristolochia sempervirens* (Aristolochiaceae), all present in or around Barcelona, Catalonia (northeastern Spain). All are recent additions to the increasing alien flora of the region. Some have been recorded previously from the Iberian Peninsula but are new to Catalonia; others appear to be new records for the peninsula.

Key words: alien flora; Barcelona; introduced; naturalized.

Resumen
NOTAS ACERCA DE XENÓFITOS DETECTADOS EN CATALUÑA, ESPAÑA.— Estas notas incluyen seis especies, entre ellas tres gramíneas: *Axonopus compressus*, *Dactyloctenium aegyptium* y *Megathyrsus maximus*, la crucífera *Lepidium densiflorum*, la pequeña compuesta anual *Soliva sessilis* y la trepadora *Aristolochia sempervirens* (Aristolochiaceae), todas ellas presentes en o alrededor de la ciudad de Barcelona, Cataluña (nordeste de España). Forman parte de la creciente flora alóctona de la región. Algunas han sido citadas con anterioridad en la península, pero son novedades para Cataluña, mientras que otras parecen constituir nuevas citas para la Península Ibérica.

Palabras clave: Barcelona; flora alóctona; introducida; naturalizada.

Aristolochia sempervirens L. (= *A. altissima* Desf.).

Spain, Barcelona: Barcelona, Montjuïc, UTM 31T DF3079, 170 m, 14.06.2011, *S. Pyke* (BC915214); Barcelona, Montjuïc, UTM 31T DF2979, 130 m, 15.05.2012, *S. Pyke SBP6739*.

Climber found growing on Montjuïc, the coastal hill within the city limits of Barcelona, where it seems to prefer the shade of pine (*Pinus halepensis* Mill.) and other trees. In early 2013 about a dozen plants were located in an area occupying approximately 1 km^2 between 130 and 180 m above sea level. It is a Central and Eastern Mediterranean species, with its western limit in Algeria, though naturalized further north in Italy and the south of France. The only Peninsula record is from Portugal (Beira Litoral; Almeida, 1999) where it has become naturalized. We are not aware of earlier records from Spain, and can only suppose it to be a recent introduction in this locality.

Lepidium densiflorum Schrad.

Spain, Barcelona: Barcelona, Zona Franca, Passeig de la Zona Franca, UTM 31T DF2879, 0–10 m, 9.05.2012, *S. Pyke* (BC878060).

Within this section of *Lepidium* L. (sect. *Dileptium* DC.), there are several closely related species amply distributed worldwide, particularly in warm-temperate regions. The large population of several thousand plants observed in 2012 in a re-sown road verge of the most southerly district of the city of Barcelona corresponds to *L. densiflorum*, a North American species which, over some parts of its range, comes into contact with *L. virginicum* L., resulting in populations with intermediate characteristics which prove difficult to classify. Both these species are naturalised, or appear as sporadic casuals, in Europe. Also recorded from Europe, though less frequently, are *L. africanum* (Burm. f.) DC., from climatically suited regions of the African continent, and *L. bonariense* L. from the Cono Sur of South America. The native European *L. ruderale* L. is present in the northern half of the Iberian Peninsula, and the alien *L. virginicum* and *L. bonariense* have also been recorded from various localities. However, I have been unable to find records or samples of *L. densiflorum*, though the possibility of misidentifications among these critical taxa cannot be ruled out.

Although regional and national floras may help, it is advisable for the collector of plants belonging to this section to consult the second edition of *Flora Europaea* (Akeroyd & Rich, 1993), as this treatment provides a key to both native and alien species, along with brief but accurate descriptions.

Soliva sessilis Ruiz & Pavón, incl. *S. pterosperma* (Juss.) Less. (≡ *Gymnostyles pterosperma* Juss.) and *S. daucifolia* Nutt.

Spain, Barcelona: Barcelona, Zona Franca, Plaça Sant Cristòfol, UTM 31T DF2779, 5 m, 17.04.2011, *S. Pyke* (BC915251); Barcelona, Gran Via–c. Mineria, UTM 31T DF2880, 13 m, céspedes, 27.05.2011, *S. Pyke* (BC915252).

This low-growing more or less prostrate annual plant of the Composite tribe *Anthemideae*, originating in the Cono Sur of South America, is today naturalized in North America, Europe, Oceania and elsewhere, and apparently best considered taxonomically *sensu lato* at present. The populations observed show cypselas with wing outline conforming to the original description of *S. pterosperma*, but studies (for instance Lovell *et al.* 1986) have shown this character to be not entirely reliable.

This could well be the first record of this plant from Catalonia. It is present in various other coastal localities in the peninsula, including the Basque Country (Aizpuru *et al.*, 2007), Huelva (Sánchez Gullón & Verloove, 2009), NW Spain and Portugal (Tutin, 1976).

It is found in well-established lawns and between paving stones and resists mowing very successfully. Its spine-tipped, winged fruit is easily dispersed by treading and on the blades of lawnmowers. It can be detected between December and mid-May. By June it has all but disappeared. Following autumn rain, new rosettes begin to appear. Accompanying species (apart from the sown grasses) in the two lawns where the plant was observed in 2011 were as follows: *Amaranthus deflexus* L., *Capsella bursa-pastoris* (L.) Medik., *Coronopus didymus* (L.) Sm., *Crepis bursifolia* L., *Cyclospermum leptophyllum* (Pers.) Sprague ex Britton & P. Wilson, *Cynodon dactylon* (L.) Pers., *Digitaria sanguinalis* (L.) Scop., *Eleusine indica* (L.) Gaertn., *Hordeum murinum* L. subsp. *leporinum* (Link) Arcang., *Malva parviflora* L., *Medicago lupulina* L., *Medicago polymorpha* L., *Medicago truncatula* Gaertn., *Melilotus indicus* (L.) All., *Oxalis corniculatus* L., *Plantago coronopus* L., *Plantago major* L., *Poa annua* L., *Polycarpon tetraphyllum* (L.) L., *Polygonum aviculare* L., *Portulaca oleracea* L. subsp. *nitida* Danin & Baker, *Ranunculus parviflorus* L., *Sagina apetala* Ard., *Stellaria pallida* (Dumort.) Piré, *Taraxacum officinale* Weber, *Torilis nodosa* (L.) Gaertn., *Trifolium glomeratum* L., *Trifolium repens* L., *Trifolium tomentosum* L., *Veronica arvensis* L., *Veronica persica* Poir., and *Veronica polita* Fries.

The species presumably sown included *Festuca arundinacea* Schreb., *Poa pratensis* L. and *Lolium perenne* L.

Axonopus compressus (Sw.) P. Beauv.

Spain, Barcelona: Barcelona, Montjuïc, UTM 31T DF2879, 20 m, 25.12.2011, *S. Pyke* (BC878038) and 2.01.2012 (BC878039).

This grass was found growing on a slope planted with ivy (*Hedera* L. cultivars). Although a tropical species—native to the New World tropical and subtropical regions —it seems to tolerate fairly cold, damp conditions, although it needs to be stressed that most winters have been mild in the last decade, thus favouring the survival of warmer-climate plants. This stated, the very cold spell in early 2012,

which could have eliminated the population, failed to do so, and at the time of writing, the plants are visible again and appear to be well established.

Some members of the genus are similar to *Digitaria* Haller, though apparently more closely related to *Paspalum* L. The species in question is closely related to *A. fissifolius* (Raddi) Kuhlm. (*A. affinis* Chase), a grass naturalized in the Minho region (river Cávado) in the NW Iberian Peninsula, and recently detected in the province of Huelva in SW Spain (Valdés *et al*., 2011). In fact, the two taxa are hard to separate until well studied. The most useful distinction appears to be the ratio of fertile floret length/total spikelet length, best observed when the grain is maturing (details in Zuloaga, 2003, and Giraldo-Cañas, 2008). The leaves are generally broader with margins normally ciliate in *A. compressus*, and this species has slightly longer, more pointed, spikelets than those found in *A. fissifolius*.

Both species develop long stolons which root at the nodes, thus increasing their chances of survival. These stolons are characterized by their short leaves and often arching internodes. Growth is fast once temperatures over 21ºC are reached.

Dactyloctenium aegyptium (L.) Willd.

Spain, Barcelona: Barcelona, Poble Nou, UTM 31T DF3383, 0–5 m, 4.09.2011, *S. Pyke* (BC915253).

This Old World tropical and warm-temperate grass has been recorded from various parts of Southern Europe including the Iberian Peninsula (Aragoneses *et al*., 2011). This population, likely to persist in its observed locality if the present climate trend remains, constitutes what is believed to be the second record from Catalonia, the first being from the nearby locality of Gavà (Verloove & Sánchez Gullón, 2008).

It can be recognised by its (2)4–8 digitate inflorescence, each raceme ending in a short bare section of the rachis. The seed is rugose-tuberculate, with more or less horizontal furrows, a character which, together with *Eleusine* Gaertn., separates this genus from other tropical and sub-tropical grasses.

Apparently, this grass normally behaves as an annual, and the plants observed are caespitose annuals. However, most of the inflorescences on the collected material are made up of only two arms. In fact, the species is reportedly very variable, and stoloniferous plants are also known to occur. Other species in the genus include perennials like *D. australe* Steud., which has a strongly vegetative behaviour and produces long stolons, and supposedly differs also in its inflorescence having fewer racemes. This more southerly African species is used as a lawn grass in many countries, and as a consequence, is now naturalized in Australia and other parts.

Megathyrsus maximus (Jacq.) B. K. Simon & S. W. L. Jacobs (≡ *Panicum maximum* Jacq.).

Spain, Barcelona: Sant Feliu de Llobregat, Can Falguerer, UTM 31T DF1981, 20 m, 8.08.2011, *S. Pyke* (BC915245).

A grass earlier detected in Cambrils (Tarragona) growing in an area later affected by urban development (Verloove, 2005) *ut Urochloa maxima* (Jacq.) R. D. Webster, and later found growing in great quantity along the route of the motorway AP7 in the provinces of Castelló and Valencia (Verloove, 2006).

The present record of this African grass is from the province of Barcelona, close to the city of Barcelona in the locality of Sant Feliu de Llobregat, where a variety responding closely to var. *coloratus* (C. T. White) Simon & Jacobs grows on the banks of the A2 shortly after this road separates from the motorway on leaving the lower Llobregat area.

This genus, the name being taken from the subgeneric rank (Simon & Jacobs, 2003), attempts to resolve the earlier difficulties involved in passing this grass, along with *M. infestus* (Peters) Simon & Jacobs, to the genus *Urochloa* P. Beauv. The rugose lemma and palea of the upper (fertile) floret is the chief character these two species present which help distinguish *Megathyrsus* (Pilg.) B. K.Simon & S. W. L. Jacobs from *Panicum* L. as presently defined.

According to White (1938), var. *coloratus* is distinguished by its hairiness especially on the leaf sheaths and in the ligular zone as well as the dark purple mature spikelets, and is supposed to be a robust grass (although the literature states that the habit is exceedingly variable in *M. maximus s. l.*). The Sant Feliu population possesses these characteristics, although the plants observed are not especially robust. Verloove (2005, 2006) mentioned the Cambrils population without indicating the variety, and those further south he included in var. *pubiglumis* (K. Schum.) Simon & Jacobs. There may not be much support for these varieties in a taxon so variable and widely dispersed as is *M. maximus*.

Conclusions

In this present age the migration of plants, in many cases as a consequence of human activity, is a reality that cannot be effectively impeded. However, the more environmentally aggressive species need to be identified and, where possible, appropriate control methods employed.

Of the plants mentioned above, perhaps only *Megathyrsus maximus* and *Soliva sessilis* could be considered a potential nuisance. The exotic grasses are at present at their climatic limit, but if the north Mediterranean coast becomes gradually more subtropical this type of plant will gradually become more established in the region.

As regards the degree of naturalization, the following can be considered as more or less naturalized: *Aristolochia sempervirens*, *Soliva sessilis* and *Megathyrsus maximus* (this latter species more so further south). *Dactyloctenium aegyptium* self-sows and reappears every year, though in very small quantity, and in the cited locality seems to be in direct competition with *Eleusine indica*. The other records need to be monitored, and can at present be considered as casuals, though could become more firmly established given time.

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